

CLAIMS

1. A flexible interconnect substrate comprising:
a tape-shaped base substrate; and
an interconnect pattern formed on the base substrate,
wherein the base substrate includes:
a first region in which a predetermined interconnect
pattern has been formed and which will form a unit when separated
from the base substrate; and
a second region positioned next to the first region in
the longitudinal direction of the base substrate; and
wherein the second region has a low-bending-resistance
portion which is formed in a region that excludes a central
portion of the second region in the widthwise direction of the
base substrate, for ensuring that the second region bends more
readily in the direction in which the longitudinal axis of the
base substrate bends, in comparison with the first region.
2. The flexible interconnect substrate as defined in claim
1, wherein the low-bending-resistance portion is one of
through-holes, cuts, and a thinner portion.
3. The flexible interconnect substrate as defined in claim
1,
wherein a high-bending-resistance portion is formed in
each of the first region and the central portion of the second
region in the widthwise direction of the base substrate;

wherein the high-bending-resistance portion is formed to avoid a region that excludes the central portion of the second region in the widthwise direction of the base substrate; and

wherein the region avoided by the high-bending-resistance portion forms a relatively low-bending-resistance portion.

4. The flexible interconnect substrate as defined in claim

1,

wherein a hole is formed in the first region of the base substrate; and

wherein a portion of the interconnect pattern is positioned within the hole.

5. The flexible interconnect substrate as defined in claim

4,

wherein the second region is formed to bend more readily than the first region that bends readily due to the formation of the hole.

6. The flexible interconnect substrate as defined in claim

1,

wherein a plurality of the low-bending-resistance portions are formed in a straight line within the second region, across the width of the base substrate.

7. The flexible interconnect substrate as defined in claim

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6. wherein the plurality of low-bending-resistance portions are disposed on two edge portion sides of the base substrate, symmetrically with respect to the center in the widthwise direction of the base substrate.

8. The flexible interconnect substrate as defined in claim 6,

10 wherein the plurality of low-bending-resistance portions are disposed on two edge portion sides of the base substrate, asymmetrically with respect to the center in the widthwise direction of the base substrate.

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15 9. The flexible interconnect substrate as defined in claim 8,

wherein the interconnect pattern is formed to be offset towards either of two edge portions of the base substrate, with respect to the center in the widthwise direction of the base substrate.

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10. A tape-shaped semiconductor device comprising:
the flexible interconnect substrate as defined in claim 1; and

25 a semiconductor chip connected electrically to the interconnect pattern of the base substrate.

11. A tape-shaped semiconductor device comprising:

the flexible interconnect substrate as defined in claim

8; and

a semiconductor chip which is disposed offset towards either of two edge portions of the base substrate, with respect to the center thereof in the widthwise direction of the base substrate, and which is connected electrically to the interconnect pattern of the base substrate.

12. A tape-shaped semiconductor device comprising:

the flexible interconnect substrate as defined in claim

9; and

a semiconductor chip which is disposed offset towards either of two edge portions of the base substrate, with respect to the center thereof in the widthwise direction of the base substrate, and which is connected electrically to the interconnect pattern of the base substrate.

13. A semiconductor device which has a shape obtained by punching out the base substrate of the tape-shaped semiconductor device as defined in claim 10 along an outline that surrounds the semiconductor chip.

14. A semiconductor device which has a shape obtained by punching out the base substrate of the tape-shaped semiconductor device as defined in claim 11 along an outline that surrounds the semiconductor chip.

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15. A semiconductor device which has a shape obtained by punching out the base substrate of the tape-shaped semiconductor device as defined in claim 12 along an outline that surrounds the semiconductor chip.

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16. A circuit board which is connected electrically to the semiconductor device defined in claim 13.

10 17. A circuit board which is connected electrically to the semiconductor device defined in claim 14.

18. A circuit board which is connected electrically to the semiconductor device defined in claim 15.

15 19. Electronic equipment having the semiconductor device as defined in claim 13.

20 20. Electronic equipment having the semiconductor device as defined in claim 14.

21. Electronic equipment having the semiconductor device as defined in claim 15.

25 22. A method of manufacturing a semiconductor device, comprising the steps of:

winding the flexible interconnect substrate as defined in any of claims 1 to 9 onto a reel in preparation; and then

Sub C2 } pulling the flexible interconnect substrate out from the
reel.

23. A method of manufacturing a semiconductor device,
5 comprising the steps of:

winding a tape-shaped semiconductor device which
comprises the flexible interconnect substrate as defined in any
of claims 1 to 9 and a semiconductor chip connected electrically
to the interconnect pattern of the flexible interconnect
10 substrate, onto a reel in preparation; and then

pulling the tape-shaped semiconductor device out from the
reel.

24. The method of manufacturing a semiconductor device as
15 defined in claim 23,

wherein the flexible interconnect substrate is punched
out at the first region, during the step of pulling the
tape-shaped semiconductor device out from the reel.